

# **THE EFFECTS OF FLY ASH CLASS F TOGETHER WITH HIGH STRENGTH CONCRETE**

## **Final Project**

Submitted as a partial fulfillment of  
The Requirements of getting Bachelor degree of Civil Engineering



Submitted by :

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To

**DEPARTMENT OF CIVIL ENGINEERING  
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UNIVERSITAS MUHAMMADIYAH SURAKARTA  
2018**

**VALIDITY SHEET**

**THE EFFECTS OF FLY ASH CLASS F TO GET HIGH STRENGTH  
CONCRETE**

**Final Project**

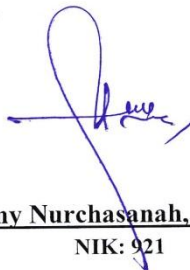
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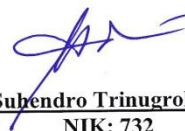
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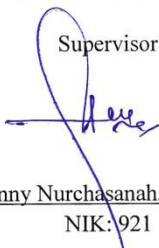
**THE EFFECTS OF FLY ASH CLASS F TO GET HIGH STRENGTH  
CONCRETE  
Final Project**

Submitted and defended in Final Examination of  
Final Project in Front of Board of Examiners On 25 July 2017

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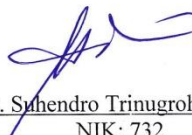
  
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The Final Project is Accepted in partial fulfillment of the requirement  
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### ORIGINALITY STATEMENT OF FINAL PROJECT

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Final Project Title : THE EFFECTS OF FLY ASH CLASS F TO GET HIGH STRENGTH CONCRETE

Hereby declare truthfully that:

1. Final with the above title is the result of research collaboration between the supervisor (Yenny Nurchasanah, ST, MT) as a principal investigator with the author (Ismail. N. Abuzahra) as a research assistant, and in this text there is no work scientific that have been asked by others to obtain an academic degree sector in college, and there is no work or opinions ever written or published by others in part or in full, except in writing, cited in the manuscript and published in the source citation or bibliography.
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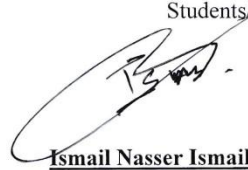
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## **Motto**

Fighting Has been enjoined upon you while it is hateful to you. But perhaps you hate a thing and it is good for you ,and perhaps you love a thing and it is bad for you. And Allah Knows,while you know not.

(Al-Baqarah;216)

The Relation of patience to iman is like the relation of the head is chopped off, the body become useless. Then he raised his voice and said : Certainly, the one who has no patience has no iman, and patience is like a riding-beast that never gets tired.

(Ali Bin Abi Thalib)

Remember whatever, whenever, wherever of you, don't forget to always pray, because the power of pray is 80 percent, and 20 percent is your might.

(My Father)

Seeking Knowledge with honesty is better ,Although that always fails and Make you fall in deep, rather than just wanting best value for fear of fall and down to deep

(The writer)

## **DEDICATION**

FOR ALLAH SWT, MY FATHER AND MOTHER WHO LOVES AND ALWAYS PRAY  
FOR ME, MY BROTHERS ,MY SISTERS ALWAYS LOVE ME,THE BELOVED WHO  
ALWAYS ENCOURAGE MY SPIRIT, THE MUHAMMADIYAH UNIVERSITY OF  
SURAKARTA AND ALL MY RELATIVES AND FRIENDS.

FROM SWEAT THAT SWELLS PROFUSELY, THEREIN LIES THE HOPE FOR YOUR  
CHILD LOOKS PROPER

## PREFACE

*Assalaamualaikum Wr. Wb*

Alhamdulillah.Praise gratitude for grace and mercy of allah so writer able to solve duty end of this to reach degrees s-1 in universitas muhammadiyah surakarta. Don't forget writer gave utterance to thank parties had been meritorious over completion of duty end of this, among other :

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Authors realized that the preparation of reports duty the end is still far from perfect , therefore criticisms and suggestions that is build was expected to dansemoga this report beneficial to us all .Amen .

*Wassalamu'alaikum Wr. Wb.*

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## LIST OF NOTATION

ACI	: <i>American Concrete Institute</i>
ASTM	: <i>American Society for Testing and Material</i>
$f'_c$	: Compressive Strength (MPa)
kN	: Kilo Newton
K1	: Code of Cylinder Object
K2	: Code of Cylinder Object
K3	: Code of Cylinder Object
K4	: Code of Cylinder Object
K5	: Code of Cylinder Object
MPa	: Megapascal
PCC	: <i>Portland Composit Cement</i>
PPC	: <i>Portland Pozzoland Cement</i>
SNI	: Standard National Indonesia
$Sp$	: <i>Superplasticizer</i>

## THE EFFECTS OF FLY ASH CLASS F TO GET HIGHSTRENGTH CONCRETE

### ABSTRACT

Based on the results of research and discussion that has been described, it can be concluded into which are as follows : Age care greatly affect the strength of concrete, At the age of 28 days the compressive strength of concrete obtained at normal (without the use of flyash), Experiencing an increase, compressive strength of normal concrete compressive strength is obtained to exceed the plan that is equal to 28.875MPa. At the levels of fly ash 20% obtained higher scores than normal concrete in the amount of 47.369MPa, whereas the levels of fly ash 5%, 10%, and 15% also increased the compressive strength of 37.178MPa, 36.423MPa and 32.838MPa respectively, at levels of fly ash 15% at 28 days compared with normal concrete (without the use of fly ash) the difference is too small, the importance of the optimal levels at 28 days was 5% - 20% of the weight of the cement and the high strength, so we conclude from this mix design that we should be careful when start mix all the component and follow the numbers that we got in the mix design.

**Keyword:** *compressive strength, concrete, fly ash, high strength*